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# मानक

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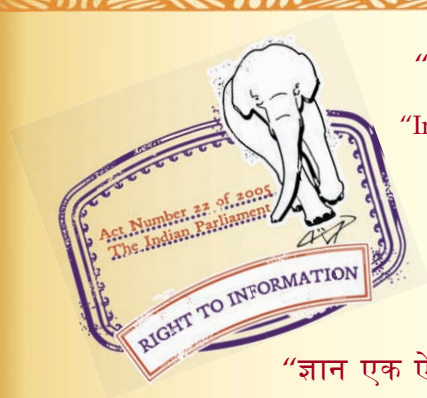
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IS 10026-3-5 (1983): Insulating varnishes containing solvents, Part 3: Specifications for individual materials, Section 5: Baking varnishes with temperature index 130 [ETD 2: Solid Electrical Insulating Materials and Insulation Systems]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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**IS : 10026 ( Part 3/Sec 5 ) - 1983**

**( Superseding IS : 350-1968 )**

**( Reaffirmed 1996 )**

*Indian Standard*

**SPECIFICATION FOR  
INSULATING VARNISHES CONTAINING  
SOLVENTS**

**PART 3 SPECIFICATIONS FOR INDIVIDUAL  
MATERIALS**

**Section 5 Baking Varnishes with Temperature  
Index 130**

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**BUREAU OF INDIAN STANDARDS**  
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**NEW DELHI 110002**

**Gr 2**

**August 1983**

IS : 10026 ( Part 3/Sec 5 ) - 1983

( Superseding IS : 350-1968 )

( Reaffirmed 1996 )

## *Indian Standard*

### SPECIFICATION FOR INSULATING VARNISHES CONTAINING SOLVENTS

#### PART 3 SPECIFICATIONS FOR INDIVIDUAL MATERIALS

#### Section 5 Baking Varnishes with Temperature Index 130

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( Continued on page 2 )

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( Continued from page 1 )

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## *Indian Standard*

### SPECIFICATION FOR INSULATING VARNISHES CONTAINING SOLVENTS

#### **PART 3 SPECIFICATIONS FOR INDIVIDUAL MATERIALS**

#### **Section 5 Baking Varnishes with Temperature Index 130**

### **0. FOREWORD**

**0.1** This Indian Standard (Part 3/Sec 5) was adopted by the Indian Standards Institution on 24 March 1983, after the draft finalized by the Solid Electrical Insulating Materials Sectional Committee had been approved by the Electrotechnical Division Council.

**0.2** This standard deals with insulating varnishes containing solvents. It consists of the following three parts.

Part 1 Definitions and general requirements,

Part 2 Methods of tests, and

Part 3 Specifications for individual materials.

**0.3** This standard covers the requirements for baking varnishes with temperature index 130.

**0.4** This standard should be read in conjunction with IS 10026 ( Part 1 )-1981\* and IS : 10026 ( Part 2 )-1982\*.

**0.5** This standard specifies optional requirements for density, flash point, dilution ability and reaction of varnish with copper, which shall be carried out if agreed to between the purchaser and the supplier and shall be within the limits when compared with declared values applying the tolerances given in Table 1.

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\*Specification for insulating varnishes containing solvents:

Part 1 Definitions and general requirements

Part 2 Methods of tests.

**IS : 10026 ( Part 3 Sec 5 ) - 1983**

**0.6** This standard supersedes IS : 350-1968\*.

**0.7** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard

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## **1. SCOPE**

**1.1** This standard ( Part 3/Sec 5 ) covers the requirements for both impregnating and finishing insulating varnishes containing solvents, curing of which requires the application of heat and which are of temperature index 130

**1.2** Impregnating varnishes are classified in two types, namely:

- a) flexible, and
- b) hard.

## **2. GENERAL REQUIREMENTS**

**2.1** All materials in a consignment shall comply with the requirements given in IS : 10026 ( Part 1 )-1981‡, for colour, condition of supply, and shelf life.

## **3. PERFORMANCE REQUIREMENTS**

**3.1** When tested according to the relevant methods described in IS : 10026 ( Part 2 )-1982‡, the material shall conform to the requirements given in Table 1.

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\*Specification for organic baking, impregnating, insulating varnishes for electrical purposes ( *first revision* )

†Rules for rounding off numerical values ( *revised* )

‡Specification for insulating varnishes containing solvents:

Part 1 Definitions and general requirements.

Part 2 Methods of tests



AMENDMENT NO. 1 JANUARY 1986

TO

IS:10026 (Part 3/Sec 5)-1983 SPECIFICATION FOR  
INSULATING VARNISHES CONTAINING SOLVENTS

PART 3 SPECIFICATIONS FOR INDIVIDUAL MATERIALS

Section 5 Baking Varnishes with  
Temperature Index 130

[Page 5, Table 1, Sl No. (iii)] - Substitute  
the following for the existing matter under respective  
columns:

SL NO. (1)	TEST METHOD CLAUSE (2)	REQUIREMENT (4)	REMARKS (5)
iii)	Non-vola- 5 of tile IS:10026 matter† (Part 2)- 1982‡	±2 percent of the nomi- nal value	Nominal value to be agreed between the purchaser and the supplier and shall not be below 40 percent

(ETDC 63)

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Reprography Unit, ISI, New Delhi, India

**TABLE 1 SCHEDULE OF CHARACTERISTICS**  
( Clauses 0 4 and 3 1 )

Sr. No.	PROPERTY (2)	TEST METHOD CLAUSE (3)	REQUIREMENT (4)	REMARKS (5)
i)	Density*	3 of IS : 10026 ( Part 2 ) - 1982†	± 0.05 of the nominal value	Nominal value to be agreed upon between the purchaser and the supplier
ii)	Viscosity†	4 of IS : 10026 ( Part 2 ) - 1982†	± 15 percent of the nomi- nal value	Nominal value to be agreed upon between the purchaser and the supplier
iii)	Non-volatile matter†	5 of IS : 10026 ( Part 2 ) - 1982†	± 2 percent of the nomi- nal value	Nominal value to be agreed upon between the purchaser and the supplier
iv)	Drying in thin film	6 of IS : 10026 ( Part 2 ) - 1982†	Non-tacky in not more than 4 hours	See Note 1
v)	Flash point, Min*	7 of IS : 10026 ( Part 2 ) - 1982†	23°C	—
vi)	Dilution ability or com- patibility, percent, Min*	8 of IS : 10026 ( Part 2 ) - 1982†	100	—
vii)	Ability to cure in con- siderable thickness†	9 of IS : 10026 ( Part 2 ) - 1982†	Not worse than S 1, U 1, and I 4 1 uniform	See Note 1
viii)	Check for resoftening†	10 of IS : 10026 ( Part 2 ) - 1982†	Not worse than W.2	—
ix)	Reaction of varnish with copper*	11 of IS : 10026 ( Part 2 ) - 1982†	The copper shall not change colour	—

( Continued )

TABLE 1 SCHEDULE OF CHARACTERISTICS — *Contd*

SL No.	PROPERTY	TEST METHOD CLAUSE	REQUIREMENT	REMARKS
(1)	(2)	(3)	(4)	(5)
x)	Stability of varnish in an open vessel†	12 of IS : 10026 ( Part 2 ) - 1982†	Change in viscosity not more than 3 times the original value. No skin formation, precipitation or gelled lumps	—
xi)	Effect of varnish on enamelled ware†	13 of IS : 10026 ( Part 2 ) - 1982†	Pencil hardness not softer than H	Applicable for impregnating varnishes only
xii)	Flexibility test	14 of IS : 10026 ( Part 2 ) - 1982†		
	a) Mandrel test†		No cracking of varnish film, detectable by normal vision	Applicable for flexible varnishes only
	b) Adhesive strength, N/mm <sup>2</sup> , Min		4.5	See Note 1
xiii)	Resistance to transformer oil:	15 of IS : 10026 ( Part 2 ) - 1982†		
	a) Visual examination		No evidence of attack	—
	b) Total acidity, mg KOH/g, Max		0.40	—
	c) Sludge value, percent by mass, Max		0.10	—
xiv)	Effect of heat ageing on flexibility	16 of IS : 10026 ( Part 2 ) - 1982†	No visible damage or detachment of the film on convex side, on bending over a mandrel of diameter 4.75 mm	For flexible varnishes only

xv)	Electric strength, kV/mm, <i>Min</i>	17 of IS : 10026 ( Part 2 ) - 1982†	50	See Note 1
			a) In air, at room tem- perature†	—
			b) In air, at 130°C	
			c) After immersion in water†	
			d) In liquid chemicals	The type of chemical and its concentration to be agreed upon between the purchaser and the supplier
xvi)	Resistance to tracking, <i>Min</i>	18 of IS : 10026 ( Part 2 ) - 1982†	50 drops	See Note 2
xvii)	Volume resistivity, Ohm cm, <i>Min</i> †	19 of IS : 10026 ( Part 2 ) - 1982†		
			a) In air	See Note 1
			b) After immersion in water	After seven days of immersion in water
xviii)	Bond strength coefficient†	20 of IS : 10026 ( Part 2 ) - 1982†	1.5 <i>Max</i>	For flexible insulating varnishes only
			1.5 <i>Min</i>	For hard varnishes only
xix)	Dissipation factor and permittivity	21 of IS : 10026 ( Part 2 ) - 1982†	Under consideration	—

( Continued )

TABLE 1 SCHEDULE OF CHARACTERISTICS — *Contd.*

Sl. No.	PROPERTY	TEST METHOD CLAUSE	REQUIREMENTS	REMARKS
(1)	(2)	(3)	(4)	(5)
xx)	Thermal endurance	22 of IS 10026 ( Part 2 ) - 1982†	Temperature index not less than 130	a) Reduction in electric strength to 12 kV/mm b) Loss of mass up to 30 percent c) Bond strength ( by helical coil method ) up to 30 percent of the initial value
xxi)	Resistance to mould growth	APPENDIX G of IS 6127-1971§	To pass the test	See Note 3

NOTE 1 — Temperature and time for curing of each coat is to be recommended by the supplier

NOTE 2 — Applicable for finishing varnishes specially designed for resistance to tracking

NOTE 3 — Applicable for finishing varnishes specially designed for resistance to mould growth

\*Optional requirements, to be carried out if agreed to between the purchaser and the supplier

†Shall be carried out as routine test

‡Specification for insulating varnishes containing solvents Part 2 Methods of tests

§Specification for varnish, spar and fungicidal

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